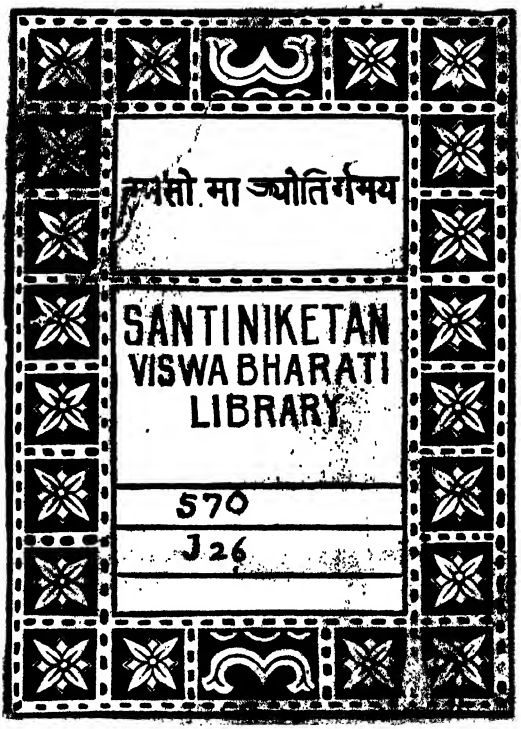
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THE MAKING OF A MAN

(From painting by Edwin A. Abbey.)

SIR GALAHAD

My strength is as the strength of ten
Because my heart is pure.

THE MAKING OF A MAN

THE PHYSIOLOGY AND HYGIENE OF SEX FOR HIGH SCHOOL BOYS, THEIR PARENTS AND TEACHERS

BY

O. EDWARD JANNEY, M. D.

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WITH ILLUSTRATIONS BY J. F. DIDUSCH

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To Whom it may Concern:

The course of lectures which formed the basis for the book "The Making of a Man" was first given in the Friends' School, Baltimore, under my direction.

I have carefully examined the book, and warmly commend it to boys of high school age, their parents and teachers, as a source of information on the physiology and hygiene of sex. It may be studied with interest and profit.

(Signed) EDWARD C. WILSON,
Principal.

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O. EDWARD JANNEY, M.D.

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FOREWORD.

This study of the physiology and hygiene of sex has grown out of a course of lectures on the subject given by the author to many classes of boys in high schools.

The treatment may seem to some to be too brief and therefore inadequate, but instructors of youth hold that it is not best nor necessary to enter too fully into particulars on this subject, but that a clear and sufficient understanding may be had through a short treatise, which, however, must not omit any important point.

This book has been prepared with extreme care and follows modern ideas of teaching. It is scientific, being based on biology, botany and eugenics; but not too scientific, it is hoped, to hold the attention of all who have the care of the young.

Nor is there any reason why this book should not be placed in the hands of any thoughtful, normal boy. He will receive through reading it the instruction necessary for his welfare and his preparation for fatherhood imparted in a sane and wholesome way.

Every boy who is in the position of becoming at some time the head of a family possesses the right to a knowledge of the broad facts concerning the generation and development of offspring. Therefore these facts are

plainly stated, in the belief that only good can come from their scientific and reverent relation.

It is the hope of the author that parents, principals of high schools for boys, and teachers of physiology will make use of this book, finding in it, perhaps, helpful suggestions and an outline for a fuller presentation of the subject, as opportunity may arise.

THE MAKING OF A MAN

I.

THE ORIGIN OF LIFE.

The moment that we begin to observe nature we note that every object around us belongs to one of the three great kingdoms: mineral, vegetable or animal. A little further study will reveal the fact that the one great distinguishing feature of the vegetable and the animal kingdoms is that they have what we call life, while the mineral kingdom has none.

The quality that we call life possesses the power of acting on mineral substances so that they become vital. Living matter possesses certain qualities: It has the power to move, to assimilate food, to grow and to reproduce itself.

The Qualities of Mineral Matter. Now it will be seen at once that mineral matter has none of these qualities. It moves only when acted upon by some force outside of itself. A stone may be thrown into the air, but it has no power within itself to rise. It cannot add to its weight through any internal ability to absorb nourishment, and has no power to reproduce itself. And yet even in the mineral kingdom there is a hint of what happens when living mat-

ter acts upon mineral substances. Look at a crystal. The mineral substances composing it, while in a state of solution, began to arrange their particles according to a certain order and the result was the production of beautiful crystals. But even in this instance there is no evidence of life or of the possession on the part of the mineral of vital powers, as the minute particles of mineral matter which went to make up these crystals were themselves acted upon by powerful forces over which they had not the slightest control.

The Qualities of Living Matter. Both the vegetable and the animal kingdoms possess the four great qualities mentioned above. The differences, however, between them are twofold. In the first place the ability to assimilate food and to reproduce are possessed by both, as is also the power to grow; but in the vegetable kingdom the power of motion is extremely limited, and the slight movements that occur are due to the processes of growth. The second and most important difference between the two is that the animal, except in the lowest forms, possesses intelligence or instinct.

There are many instances in which it is difficult to detect the difference between the vegetable and the animal; the two forms may resemble each other closely, and yet one is an animal and the other a vegetable form of life.

Owing to the impossibility of motion on the part of plants and trees, and to the absence of mental power, they are said to have a lower form of life than that enjoyed by animals. The latter possess a wide range of independent action, and, through their intelligence, manifest immensely greater possibilities of happiness and also of misery.

The Beginnings of Life. The origin of life on the earth has always been a question of the most intense interest to mankind. The researches of modern biologists have thrown a brilliant light on the problem. According to the ideas now held by those who have given most thought to the subject, when, in the course of time, the earth had become cool enough, when the rocks had been ground into soil and the ever-changing ocean had alternately covered and fled the land, there began to exist the earliest forms of vegetable and animal life. It would seem that these forms were extremely simple, something like minute jelly-fish, just a drop of a substance like the white of an egg, called protoplasm, which means the first form of life substance. There is a minute animal called the amœba (Fig. 1), which can be seen through a microscope, that must have been very much like the earliest forms of life.

It seems evident that these first forms of life, acted on by the forces which produce complex forms from sim-

pler ones, began to develop into more complicated varieties of vegetable and animal life, which through long periods of time, evolved into the innumerable varieties of vegetable and animal forms which cover the earth at the present day. When the dry land appeared and the ocean was fixed within its limits, there was doubtless

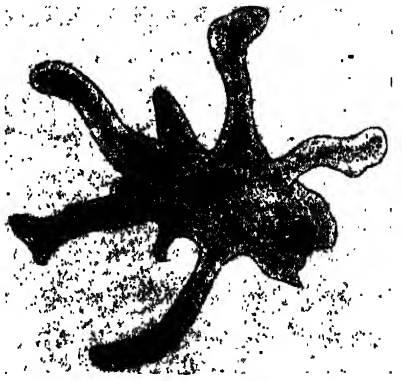


FIG. 1. Amoeba. (*After Doflein.*)

a vast increase in the variety of plants and of animals. Then there appeared reptiles, great and small, an infinite variety of insect life, the many forms of birds, the higher animals, and last of all, and most wonderful of all, man, with his marvellous mind in a splendid body.

Origin of Man. Yet, perfect instrument as man's body is, it is to be remembered that that body must have come in the course of a great period of time from a form similar to the amoeba. Small as

this animal is, it yet possesses all the qualities of life; it moves, eats, grows and reproduces itself (Fig. 2). The drop of living matter or protoplasm, which was man's remote ancestor, had to become more complex by dividing into two parts or organs, and these again into two more, and these into still others; those of a similar kind grouping themselves together so as to be able to

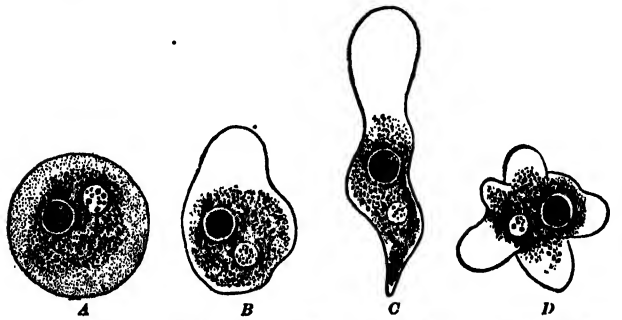


FIG. 2.

work together to the same purpose, thus forming yet more complex organs. Thus, as the amoeba passed on its way upwards to become a man, there developed in untold numbers minute particles, so small as to be seen only with the aid of a microscope, known as *cells*, some of which grouped themselves and became in the fully formed animal, the mouth or stomach; others became bones, others arteries or veins or heart. Some developed into the brain—very knowing ones these—and the nervous system; or they united to form the liver, muscles and

other necessary parts. Every part of the body is made up of these minute cells, so small that it requires several thousand of them placed side by side to make an inch.*

Cells. Man's body, then, is composed of millions of minute forms, all of which are busy performing their particular duty; all of them necessary in order that the work of the body may go on properly. When they do not act in harmony we say that we are sick, and the aim of the physician is to persuade the disorderly cells to go back to the performance of their duty; and when this occurs, health is restored. It is therefore proper to say that life resides in the cell. When the cells are so much disordered that their proper work cannot any longer be done, local death, called gangrene, occurs; and if the trouble extends far enough, the death of the body follows.

Protoplasm. It has been said that the cell consists of a drop of protoplasm, a substance somewhat like the white of an egg. What is this wonderful substance in which all life seems to center and to take its start? Where did it come from in the first place in the dim, far distant past? We can only say that we believe it came from the Creator, the Father of all life. Examine it with the eye, as we may in the form of the

* The microscope may be used in examining slides of various animal tissues.

amoeba, and we see a jelly-like substance, and that is all. Examine protoplasm chemically, and it is found to consist of the well-known elements carbon, hydrogen, oxygen, nitrogen, phosphorus and sulphur. Yet in this substance, protoplasm, life resides, and wherever vegetable or animal life exists, there is protoplasm. And, furthermore, whenever a new life starts, it begins with and is developed from protoplasm.

II.

CELL LIFE.

Nature of the Cell. It has been stated that life resides in the cell, and that the bodies of animals and the substances of plants and trees are made up of cells. We should study carefully the structure of the cell itself in its various forms.

The cell *consists of a minute particle of protoplasm* containing some granular matter called its nucleus, and usually surrounded by a very delicate membrane. In life the cells are connected, but not like the bricks in a house; there is a connecting substance that holds them together and binds them into what is called tissue; as, for instance, muscular tissue in animals and wood in trees.

Cells are often so many Siamese twins in their relation to one another. They have their individual being in one sense, while in another they act in unison with other cells. Besides, their contents frequently intermingle through connecting channels.

As life seems to reside in the cell, so the life of the cell centers in the nucleus, which nearly all cells possess. In some instances the substance of the cell is clear and transparent; in others it is granular and opaque.

Their Shape. In shape cells vary much. They may be flat and regular in outline, as those of the mucous lining of the mouth; cylindrical, as in

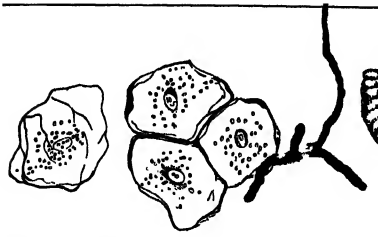


Fig. 3. Epithelial cells from the lining of the human mouth. (*After Koelliker.*)

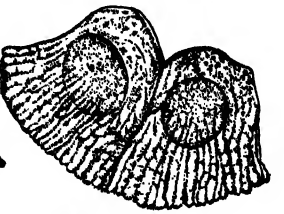


Fig. 4. Kidney cells from guinea pig. (*After Koelliker.*)

plants; columnar, as in the lining of the intestines; cup-shaped, as in the intestines; chunky, as in the kidneys (Fig. 4); furnished with waving hairs like eyelashes, as in the mouth of a frog (Fig. 15); or shaped like a splash of ink, as in the brain and nerves.

Plant Cells. In plants the cells would naturally be like a sphere, but owing to pressure from other cells they become square or many-sided. In trees this pressure often opens one cell into others and long channels are thus formed through which the sap flows (Fig. 5). These finally harden and become lifeless, constituting the wood of the trees, while new and living cells add themselves outside of the woody part just under the bark and each year increases the size of the tree, forming the "rings" which may be seen when the tree is cut across, each ring marking the growth of a year. The cells that are in the

Fig. 5. Wood cells, showing channels

leaves of plants and trees have the power to give out oxygen and absorb carbonic acid gas from the air and thus the leaves are enabled to act as the lungs of the tree. The process is just the reverse of that of animals, in which oxygen is taken in and carbonic acid is given out. This is just what one would expect, as carbon forms the bulk of woody substances, while oxygen is essential in keeping the blood pure and in condition to nourish the tissues of the body.

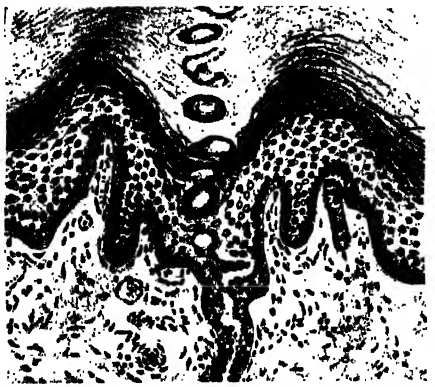
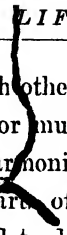


FIG. 6. Section of skin, showing epidermis, cells and oil ducts cut across.

Animal Cells. On examining the tissues of an animal by means of a microscope, it is found that every one of them consists of living cells (Fig. 6), and that the cells in each tissue are alike, while the cells of different tissues or parts of the body differ very much. Thus the cells that form bone have



a family resemblance to each other, but look very unlike those that form the brain or muscle. All of the cells in a tissue or organ act harmoniously with each other and with those of other parts of the body, doing the work that they are intended to do.

Their Use. Thus the cells in the lining of the stomach throw out the digestive fluid; those of the intestines absorb the digested food and pour it into the blood, which in turn carries it to the liver, whose cells carry on the next step in converting the food into blood. The blood carries nourishment to all the tissues of the body, and the cells in every tissue take up what they require from the blood to supply their needs and growth, and to enable them to perform their proper work. This is all done with an apparent intelligence which is furnished by the cells of the nervous system through the central station, the brain, and other nerve centers from which nerves extend to every part of the body, no matter how minute.

By examining under the microscope any tissue of the body, one who is skilled in this study will be able to decide at once by the appearance of the cells from what part of the body the specimen has come. Thus he will know whether the specimen is from the lungs, the skin, the kidneys, the brain, the blood, the eye, the muscle or other tissue; for each one is different and bears characteristic marks.

Blood Cells or Corpuscles. No cells in the animal body, perhaps, are more interesting than those of the blood. They form what may be described as a liquid tissue, containing, like all other tissues, its special cells.

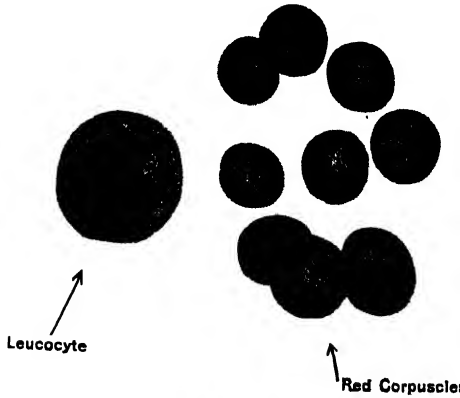


FIG. 7. Red blood corpuscles. One white corpuscle (leucocyte)

There are two kinds of blood cells, the red and the white (Fig. 7). The red ones are smaller and much the more numerous. It would take some 3500, placed side by side, to extend an inch, and they are shaped like a wheel with thickened rims. They are of a red tint and thus give the color to the blood. One of their important duties is to absorb oxygen from the air in the lungs and to carry this necessary element to every part of the body. On examining the finest blood-vessels by

means of a microscope these red blood cells may be seen hurrying along singly or in crowds, pushing their devious way through the small vessels which permeate all of the tissues of the body. They remind one of a crowd of people moving through a narrow street, some of them pausing awhile to look in the shop windows and then starting suddenly on again as if some important errand had been just remembered.* These red cells are subject to the invasion of still smaller cells, which live and grow within the blood cells and cause the disease known as malaria.

White Corpuscles. There are white cells in the blood which are larger but not nearly so numerous as the red ones. These are very interesting for several reasons, but especially because they have the power of destroying and even eating up other cells and substances that injure the blood by their presence. They thus form an army for defense for the body, and, though so small, are necessary to health.

Bacteria. There is a great variety of minute forms called bacteria or germs, some of them necessary to our well-being and some of them the cause of disease and death. There are varieties that cause ani-

*Study the web of a frog's foot under the microscope to observe this clearly.

mal and vegetable matter to decay and thus get rid of what otherwise would cause great distress. Others are active in causing useful changes, as in the case of the bacterium that produces the pleasant flavor of butter. It is a form of bacterium that makes milk become sour, while another is useful in the manufacture of cheese. Another changes cider into vinegar.

On the other hand there are many bacteria that produce sickness, especially those diseases known as contagious. Among these disorders are diphtheria, tuberculosis, typhoid fever and yellow fever.

Cause of Disease. All of these bacteria, increasing within the body with tremendous rapidity, so that, in some cases, only a few hours are required for them to pass from birth to full growth, act upon the cells, either directly or by producing a poison which is absorbed by the blood and carried to all parts of the body. Disease is usually brought about by the action of this poisoned blood upon the cells of the different tissues of the body. It would seem that different poisonous substances are attracted by different tissues. Some affect especially the mucous membrane, as in the case of diphtheria, which appears in the throat; or typhoid fever, which locates in the intestines. If the body has sufficient power to resist the poison, recovery ensues; but if not, death must follow.

Effect of Drugs. Many drugs have an attraction for certain cells in the body. Thus mercury is apt to affect the glands, as the liver. Phosphorus affects the bones, causing their decay after long exposure; the effect of snake poison is to disorganize the blood, or else to paralyze the nervous system.

Importance of Cells. It becomes quite easy, in view of all these facts, to understand something of the importance of the cells in the growth of the body and the maintenance of health. We have here a clear demonstration of the importance of little things. On the healthfulness and vitality of the cells depend the life and well-being of the individual.

III.

LIFE IN PLANTS.

In plants there is a vast variety of cells, and they join and pile up on each other so as to form the enormous bulk of the trees and the great mass of vegetation that is seen on the surface of the earth. The growth of trees occurs under the bark; the interior is not really alive, although it is in a state of preservation. If the bark be removed the tree will quickly perish. Compared with man, with his great variety of organs, a tree is simple; the sap, which may be compared with the blood, flows through the channels formed by the cells; but the cells in each variety of tree bear a close resemblance to each other, and the tree grows by the addition of one cell to another, and these finally harden into wood.

Qualities of Cells. It has been said that animal cells and the groups or organs that they form, have certain qualities that belong to all living beings. They all absorb nourishment; they move; they grow and they reproduce themselves. To a degree, plants possess all these qualities, and they possess the last mentioned to an enormous extent, as may be seen in the production of seeds, which are produced some thirty, some sixty and some an hundred fold.

Reproduction in Plants. Of all the properties of plant-life none is so wonderful as their power of reproduction and the means employed to accomplish it. As plants are innumerable in variety, each variety differs in some degree from all others in its manner of bringing forth its offspring. One thing, however, is constant: there is always utilized a male element and a female element.

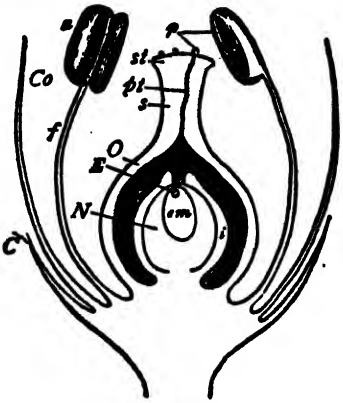


FIG. 8. Diagram of a flower. *C*, calyx; *Co*, corolla; *a*, anther on filament (*f*); *p*, pollen-grains; *st*, stigma; *pt*, pollen tubes; *s*, style; *O*, ovary; *em*, egg cell in ovule; *E*, fertilising cell. (*From Bessey.*)

Flowers and their Functions. Let us take a look at the interesting arrangements that some plants make for the perpetuation of their kind. Here is a flower * (Fig. 8). If we cut it through we

*Any form of lily constitutes a good illustration.

note that it is provided with certain parts, each of which has a definite purpose. Here is a little room wherein is the germ of the seed; this room is called the seed vessel or ovary. The word ovary is derived from ova, an egg; for the seed is the egg of the plant.

From the upper part of the ovary extends a long tube, the top of which is enlarged, somewhat roughened and often sticky. This upper part is called the stigma. The ovary and the stigma and the stem that connects them constitute the pistil.

Growing around the pistil are seen several tall, slender organs that are known as stamens, and they are crowned with variously-shaped tops called anthers. The anthers produce a golden dust called pollen, which is the male or fertilizing substance. The pistil, containing the seed-vessel or ovary, is the female part, producing the seed.

Now what happens is this: The yellow dust or pollen produced by the anthers is conveyed or falls upon the stigma, where it sticks fast. One or more of the particles of pollen sends a slender growth down the tube of the pistil until it reaches the minute seed or ovule in the ovary of the plant, touches and combines with it. The ovule then begins to develop, and in the course of time becomes a perfect seed, so that, when planted under favorable conditions, it will develop into a plant like its parent; and, in its turn, produce seeds.

Variety of Arrangement. The arrangement of the stamens and the pistils varies widely in different kinds of plants. Sometimes the stamens and the pistils are found on different plants, as in the willow. Sometimes they are on different parts of the same plant, as in corn. The object of such an arrangement is to make it difficult for a plant or tree to fertilize itself, for it has been found that much better fruit and seeds are produced when the fertilizing pollen comes from a distant plant rather than from the same plant that bears the seed. For the same reason some stamens mature before or later than the stigma, and thus make it necessary for the pollen to come from a distant flower. The reason is the same as that which should prevent near relatives among human beings from marrying.

The Work of Insects. To accomplish the same end many other means are employed by nature. Thus bees fly from plant to plant (Fig. 9), push their way into the heart of the flower in their search after honey, and in so doing, cover themselves with pollen which they carry to the next flower they visit, and deposit the pollen on the stigma as they brush by it, thus fertilizing plant after plant. If it were not for the bee there would be no clover seed, and no clover in all the land, because the clover blossom is so arranged that only the bee, flying from blossom to blossom, is capable of

Fig. 9. Fertilization of clover by bee.

carrying the pollen in to the stigma and thus making it possible for new seed to be formed and to develop. In the case of the best variety of fig, a special kind of wasp is necessary to carry the pollen; nothing else will do. Some kind of flowers attract butterflies by the brilliancy of their coloring, as in the case of those curious plants called orchids (Fig. 10); and the butterflies add to the importance of their apparently frivolous existence by becoming the carriers of the life-renewing pollen to other plants with long and narrow tubes.

The pollen of water plants is carried on the surface of the water. The wind is also an agency for distributing pollen; so are animals, and even man himself sometimes helps along.

In one way or another, then, the life-carrying pollen reaches the germ of the seed from which is to be produced a new generation plant-life. It is very interesting to note what now takes place.

Fig. 10. Orchid. (*After Grey.*)

How Life Starts in Corn. It has been said that in the plant the pollen-dust, when it becomes attached to the stigma, extends down the tube of the pistil until it enters the ovary or chamber where the ovule is waiting for it. You can see this easily and beautifully in corn (Fig. 11). When the seeds or grains of corn are first being formed, long tubes, called silk, grow out from each grain and this hangs out of the end of the ear. On the end of each one of these threads falls from the "tassel" of the corn-stalk a little pollen, and the life-nucleus of the pollen proceeds to travel down through the minute tube that is in the center of each thread of silk, until it reaches the partly formed grain, which then develops and will become perfect. If, however, no bit of life-stuff reaches down through the tube of silk, then no grains will be formed, and the ear will shrivel away. If only a few of the grains receive it they will develop and the rest of the ear will remain imperfect and valueless. Then, after the new grains have been safely started on their way, they may be depended upon to become perfect; but the tassel and the silk, having performed the

FIG. 11. Corn in tassel.

work for which they are intended, dry up and pass out of use.

Fertilization. Now this process, called fertilization, occurs, with many variations, in all plants and trees, from the humble dandelion with its thistle-like seed, to the mighty oak with its acorn. All of them depend upon the fact that the male element, pollen in some form, unites with the ovule, which is the mother part, in order to produce a new plant or tree.

Attention is called to the fact that the white oak tree does not bear acorns until it is twenty or more years old and is fully mature. Nature knows that the tree must have had time to perfect itself before bearing fruit; to do so earlier would mean the production of poor fruit, and injury to the tree.

The same is true of animals and human beings, and for exactly the same reasons. To employ in youth the powers of manhood must result in loss of strength and the prevention of that fruitful maturity so desirable.

A Relay-Race. Thus we are enabled to understand in some degree how life is renewed in plants from one generation to another; how life, through the act of the parent, is passed on from parent to offspring; how life, after all, is a form of relay-race, in which the touch, given and received, passes the vital spark on down through the future.

After their Kind.

In regard to these wonderful facts it must always be borne in mind that all plants produce other plants *after their kind*. Some years ago a quantity of wheat was found in the tomb of a mummy in Egypt. It had lain there for thousands of years, preserved in the dry wrappings of the mummy. It was planted, and produced wheat, like that raised now. One kind of grain or seed will produce but one and the same kind of grain or seed—nothing else (Figs. 12 and 13). This fact makes it neces-

Fig. 12. Ear of corn—perfect.

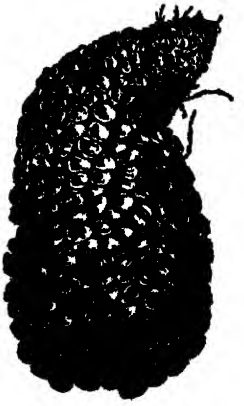


Fig. 13. Ear of corn—imperfect.

Fig. 14. Ear of pop-corn, showing dark grains mixed with white.

sary that in order to get the best results, good seed must be planted, as poor seed will bring a like poor variety. Here is an ear of corn with some seeds white and some black (Fig. 14). How may we account for this? There must have been some pollen received from stalks bearing dark-grained kernels; and for those who wished only white corn, the crop would have been ruined. It is necessary to remember, then, that even in plants the traits of parents will appear in the new plants that they reproduce, and that the great facts of inheritance apply throughout all nature.

Our Duty to Posterity. We who are now living and carrying on the work of the world should bear in mind the fact that we must soon pass on this work to the next generation. Thus we owe it to those who are to follow us—our children—that they shall be better equipped than we for the performance of these duties.

The method of selecting a wife or husband, now in vogue, must be replaced by one more in accord with science and common sense. The fact that the one selected is to be the mother or father of the coming race should be borne in mind, and those only chosen who are fitted by physical, mental and moral qualities to become the mothers and fathers of a better generation.

The affections are quite largely under our control: a

man doesn't allow his affections to go out towards a woman of another race, or who is distinctly defective in mind or body. In such instances the evident unfitness repels, and this affords a hint as to how the affections may be directed and controlled.

IV.

LIFE IN ANIMALS.

Animal Life. We now pass from the lower form of life, the vegetable, to the higher form, the animal, where motion is free and intelligence is a gift possessed by all.

Animal Cells. It is to be remembered that each animal is a mass of living particles of matter called cells; that similar ones are gathered together to perform certain kinds of work, as in the lungs and muscles; that each set of cells absorbs the necessary nourishment from the blood; that when they all work well and in harmony, health prevails; and when the cells of any part of the body are poisoned by disease or drugs, the body is said to be sick.

The Function of the Nervous System. All of the cells of the body and all of the tissues that are made up from them are under the control and direction of the nervous system, which is in itself made up of cells. That the body is not merely a mass of cells, but is made up of groups, which, in turn, all work in harmony and thus form the complete animal, is due to the nerves and the nerve centers which control the whole, and make of the mass one individual.

Fig. 15. Ciliated cells having waving hairs attached

Forms of Cells. The way in which *the different parts of* the body are adapted to their uses is very wonderful. Look at the flat cells which line the throat like a pavement and allow the food to slip over its polished surface (Fig. 3). There are cup-shaped cells in the intestines, intended to gather and pour out the digestive fluid, or to absorb the contents of the intestines and empty them into the blood; cells with waiving hairs in the throat of the dog, to facilitate the passage of the saliva up towards the mouth (Fig. 15); chunky cells, capable of holding the bile or the oil that lubricates the hair; those of nerves, reaching out in every direction, as if eager to catch a message from some distant part of the body and transmit the required message in return (Fig. 16).

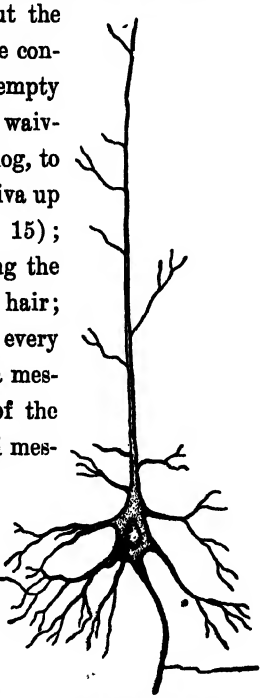


Fig. 16. Nerve cell. (*After Oberstеiner.*)

An Organ. When a group of cells of similar character has been formed to carry on a certain kind of work, the group is called an organ

and is said to be organized; as the stomach, the eye, the liver, the kidneys.

Reproductive Organs. One of the most wonderful organs in the body is that which produces the ova or seed in the female, and the male element or sperm in the male animal. You have seen in the flowering plant that there is always a male and a female part, separate from each other, often on different plants or trees; and animals follow the same rule except in some of their lower forms, in which a different arrangement is found.

Glands. When nature wishes to manufacture some fluid for the use of the body she prepares what is known as a gland. Thus the saliva is formed by small glands around the mouth, and is thrown into the mouth for the purpose of chewing, through small tubes or ducts. It is the same with the tears, which are produced by small glands just inside the socket of the eye and over the eye-ball. These always throw out enough fluid to keep the eye moist, but grief will cause a free flow of tears which the ducts cannot carry off and which overflow on the cheeks. In a similar way bile is produced by the liver, and the digestive fluids in the alimentary canal.

Not any one of these glands is so wonderful as those whose duty it is to produce the ova in the female animal, and the sperm in the male. The glands that produce the

ova, which, when fertilized, will develop into a new creature, similar to its parents, vary in different animals in size from that of a pin's head to that of a chestnut, or are even larger in the greater animals. At regular periods this gland, called as in the case of the flower, the ovary, throws out an ovum or egg, which is usually so small as not to be seen except with a magnifying glass.

In the higher animals the reproductive glands in the male animal produce a fluid which finds its way through a tortuous channel to a reservoir near to the neck of the bladder, from which there is an opening into the passage that extends from the bladder outward.

Spermatozoa. The male fluid thus produced contains a multitude of minute bodies, somewhat similar to the eggs of the female. These are called spermatozoa (Fig. 17); and these little creations, which, possessing a head and energetic body and tail, move about with great activity, are the bodies that, joining with the ova, produce a new animal.

The Vital Fluid. In the case of human beings the fluid produced by the male glands has a very important part to play in the development of the boy into the man. It begins to be produced in the very early years of boyhood and by means of the blood ves-

sels is absorbed into the system, giving strength and vitality. A little observation of animal life illustrates this point. Two colts at two years of age may look and act alike, but if the reproductive glands are removed from one of them, their appearance and characters a year later will greatly differ. The one which has been allowed to develop in accordance with nature will have become a splendid animal, strong and beautiful in form, and fierce in disposition; the other will become a docile work-horse.

This shows the marvellous influence of the sperm when allowed to become absorbed into the system; and the loss in all that goes to make the perfect animal and the strong man, when, through bad habits in youth, there is a serious and continued loss of this element. For this reason the boy will not develop into so strong and perfect a man, and may even become a degenerate.

Common Origin of Plants and Animals. The similarity of the process of reproduction in plants and animals is thus quite evident; and this similarity points to a common origin of plants and animals, in the far distant past.

FIG. 17. Human spermatozoon. (*After Retzius.*)

V.

REPRODUCTION.

The production of a new being, whether it be a plant or animal, has been shown to be due to the meeting, under the right conditions, of a male substance with a female substance.

Forms of Pollen. The male substance in the plant, formed by the anthers or similar organs and called pollen, is found under the microscope to

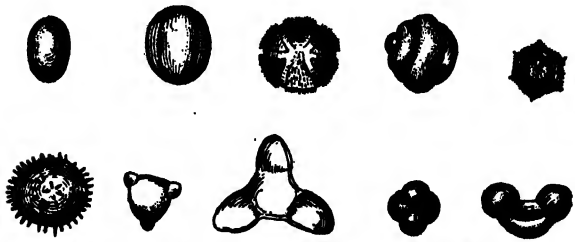


FIG. 18. Varied forms of pollen. (*After Gray.*)

differ in appearance, although to the eye most pollen seems to be a fine yellow powder (Fig. 18). There is a great variety of pollen grains and each variety will be received by the stigma of the plant to which it belongs and no other, unless it be very closely related. It is this golden dust that, conveyed by the wind, or some other means, from flower to flower, carries out the pur-

poses of nature in the production of new generations of plants, trees and fruits.

Animal Pollen. It has been stated that, like the plants, animals produce from certain glands in the body a substance which has the power of starting up new life in ovules or eggs when brought into contact with them. This substance is not in the form of powder, as in plants, but is a fluid containing the spermatozoa, which are the active agents in reproduction in animals, the fluid being the carrier for them.

Spermatozoa. The spermatozoa in all of the higher animals have the same general appearance, as you may note by comparing the forms from several animals. "The germ cell is made up of protoplasm. It is a structure of gelatinous ribbons and flecks of foam, as complex as anything in Nature. In connection with this structure all known phenomena of life are shown. Inside the germ cell is a smaller cellule called the nucleus. Here is the center of heredity. With the nucleus lies most of the process of inheritance."* The germ cells are produced in great numbers and are stored away in the body of the male animal, being gradually replaced by the development of others. Like the glands that produce

*David Starr Jordan in *The Heredity of Richard Roe.*

tears, the reproductive glands may seldom be called on for unusual service, but will then become active.

Qualities of Spermatozoa. Small as these little creatures are they are yet capable of carrying forward the traits of the parents in whose body they are produced. Peculiarities of form and feature seem to be carried by them into the next generation, and even farther down the line of heredity. Thus, in the stallion, a white star in the forehead, two white feet, a certain richness of color, some qualities that make a race-horse or a work-horse, are very certain to be shown in the next generation; facts that are well-known to those who breed horses; and the same is true of other animals, including man, as is well understood. Disease may be transmitted in the same way. There is a contagious disease known as syphilis, caused by immoral living, that acts thus, producing mental or physical weakness in offspring. Feeble-mindedness and insanity tend also to be thus inherited; the germs of these affections being carried by the spermatozoa or the ova.

Inheritance. Thus one is enabled to see what extremely important creations are the spermatozoa, since they have this wonderful power of carrying to the newly forming animals not only the appearance, qualities and propensities of the father animal, but even his physical failings. What a tremendous

lesson we get here as to the necessity for the parent to be perfect and sound; free from unfortunate inheritable traits. How important, too, that the father shall have reached full maturity before the reproductive powers shall be exercised, so that the spermatozoa shall be endowed with full life and vigor. Recall the lesson from the oak, which does not bear acorns until it is twenty or more years old. Learn also from the salmon, which does not go up the river to spawn until it is four years old. Both trees and fish seem to know, what many human beings do not seem to be aware of: that injury comes to the individual from too early use of the powers of reproduction.

Two Germs of Life. "The germ cell, male and female," says Dr. David Starr Jordan, "is one of the vital units or body cells set apart for a special purpose. All animals and all plants are made up of one cell or of co-operating cells or centers of energy. The germ cell is not in its essence fundamentally different in structure or in origin. But in its growth it is capable of repeating the whole organism from which it came, 'with the precision of a work of art.' This the other cells cannot do, at least not in the more complex organisms. A slice of potato will grow into a new potato-plant. A slice of dog will not develop into a new dog. This is because the potato is relatively simple. The dog is more complex, each part dependent on the support of each of the others."

It is intensely interesting to observe how the evidences of life start in the egg when the spermatozoon reaches it. There is always a small opening in the ovule or egg, on its surface, and one of the spermatozoa is attracted towards this opening, finds its way into it and thus reaches the interior of the ovule (Fig. 19). As

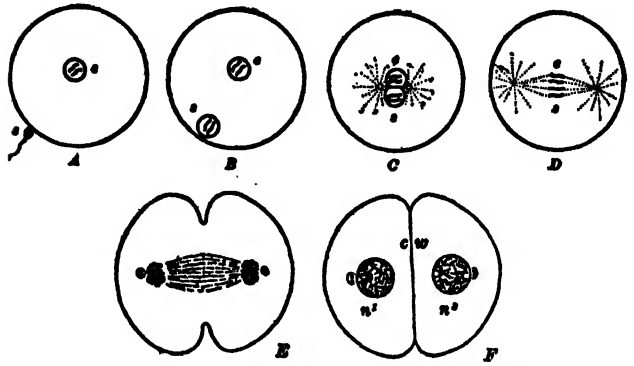


FIG. 19. Diagrams to illustrate fertilization of an egg-cell by a sperm-cell. *A*, *s*, nucleus of matured egg-cell; *s*, a sperm-cell ready to enter. *B*, sperm-cells entered and transformed into sperm-nucleus (*s*). *C*, sperm-nucleus and egg-nucleus united, fertilization complete. *D*, division leading to two-cell stage. *E*, Two new nuclei and cell body beginning to divide. *F*, division complete. (*From Wilson. Courtesy The Macmillan Co.*)

soon as it is well within, there is at once evidence that it is vital, because rays form all around it and it becomes the center of what looks like a star. This star next stretches out and becomes two stars, and then cells are seen to form, which group themselves into lines, and these thicken, forming groups, that gradually develop into the shape of an animal.

Fish from the Egg. This process can be easily and beautifully seen in the development of fish from the ovule to the fully formed individual ready to take care of itself. It may also be seen in the development of the frog from the egg, through the tad-pole or fish-state to the mature animal.

The Marvel of the Egg. Nothing in nature seems so wonderful as the development of an active living being from what seems but lifeless material.

Here, for instance, is an egg. Put in on a shelf and it will show no change for a long time, but finally will spoil and decay. Nothing comes of it. Or we may break it open, cook and eat it. Now examine an egg: just the "white" and the "yelk" are to be seen. Not the slightest appearance of life is evident. It is hard to believe that the contents of the egg differ from other food upon the table. Yet from the semi-liquid substance which we called an egg, without form and void, develops slowly under proper conditions a living creature, which we soon come to recognize as a young chick, finally becoming strong enough to break its way out of the shell and to live an independent life. How did this miracle occur? We do not know. All we can say is that the chick, like the young fish, develops into a living being when the two elements of life, the male and the female, unite, under proper conditions, to form a new creature. It is nature's secret and she keeps it close.

VI.

AFTER THEIR KIND.

A strong light can be thrown on the subject of reproduction by a study of the process in several groups of animals with whose life-history we are all familiar, or may become so.

Reproduction in Fish. Consider the ways of the fishes. As the season approaches when they are to produce their young, they make all of the necessary arrangements for this important event. Some varieties, like the sun-fish and the bass, prepare a nest on the bottom of the lake or other body of water where their abiding place may be, and in this work the father fish often does his full share.

The shad appear from the unknown depths of the ocean where they live the most of the year, and seek some fresh-water river, up which they travel for a considerable distance. So do the salmon, some varieties of which have been known to return to the same river in which they were hatched, to provide for their young, rushing up the rapids of the river to its upper waters in their eager search for just the right place in which to lay their eggs and have them hatch, far away from their enemies.

What is Roe? You have all seen the roe of a fish and have been struck by the enormous number of eggs that are in the roe or ovary of the roe-shad, which means the mother shad. There have to be great numbers of eggs because so many of them are lost after having been thrown out of the body of the mother when she has reached the right place for spawning. There are about 25,000 eggs in the roe of a herring. The male fish has in his body what is known as the milt, which is the reproductive gland and produces a milky fluid that is the sperm of the fish.

Fertilization in Fish. At the proper time the eggs are expelled into the water, whereupon the male fish swims over them and throws out from his body the life-giving fluid. This contains a great number of spermatozoa, which approach and enter the eggs that are in the water, and the eggs then become fertilized, developing rapidly into young fish (Fig. 20). Many of the eggs are not fertilized, many of them are eaten up by other fish or water creatures, but yet great numbers of them develop into full grown fish, as is proved by the multitudes that exist in the water.

All that Swim are not Fish. There are some sea creatures that do not lay eggs, but bring forth their young alive. Among these are whales and some of the sharks.

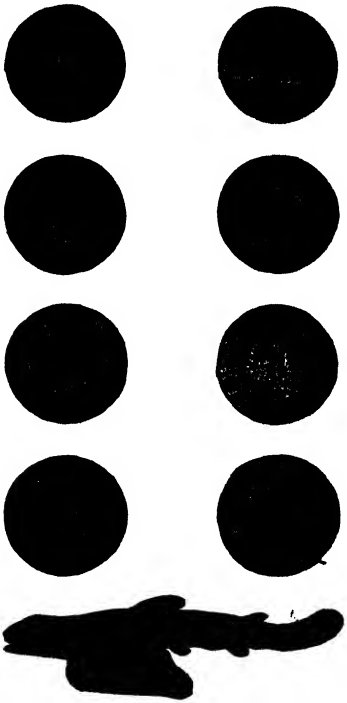


FIG. 20. Stages in development of a fish.
(From Parker & Haswell. Courtesy The Macmillan Co.)

Reproduction in Reptiles. Taking the next step higher in the scale of life we come to consider the reptiles and amphibia and their method of reproduction. They are not so numerous as the fishes, and so Nature takes more care of their young than in the case of the fish.

Most reptiles, like some snakes and turtles, lay eggs; but more care is taken to make it sure that the sperm will reach the eggs. Perhaps we may learn as much from a study of how the frog behaves as from any other member of these classes.

The Frog's Method. When the female frog is about to pass the eggs from her body, the male frog places himself nearby, and pours the life-giving fluid from his reproductive glands over the eggs and in this way they are more sure of being fertilized than in the case of the fish. The eggs, after that, enveloped in a kind of jelly, float near the surface of the water, where they may easily be seen, and in the course of time they develop into tadpoles, and swim in the water like fishes. Later they push out legs from their bodies, the tail becomes absorbed, and they hop out on the land as fully-developed frogs, capable, in their turn, of producing young.

In Birds. Now let us turn to the birds. These bright and active creatures of the air; how do they reproduce themselves?

We have now gone up another step in Nature. Birds and fowls being scarce and valuable, Nature has found it necessary to make sure provision that the young shall have more care than with fishes and reptiles. She therefore arranges that the eggs are fertilized within the body of the mother, by the life fluid of the male being thrown into the body of the mother while the eggs in the ovary are very small and soft. Later, a hard shell is formed about the egg, for its protection, and when the eggs are laid, the mother bird, and sometimes the father bird, sits upon them, keeping them warm, so that the germ of life that is within them may develop into young birds in the nest that the foresight and love of the parent birds have made ready for them.

In Higher Animals. And now we come to the final step in reproduction, that of the higher animals. Unlike the fishes and the frogs, only a few of these are produced at a time; sometimes only one. So rare are they and so valuable, that the most extreme precautions are taken by Nature to insure their living. So she arranges for these differently from her plans for the other creatures whose life history has been described, and in the case of animals of the highest grade, eggs are not expelled from the body, being fertilized within, and are kept within the body for weeks or months until the young animal is able to live independently under the

watchful care of its mother, who, after its birth, supplies it for a time with nourishment from her own body, in the form of milk.

Reverence. Thus we are enabled to observe some of the processes by which Nature keeps alive her animal creation by means of the renewal of life from generation to generation. From every point of view it is very wonderful; and there is nothing in the subject, from beginning to end, to arouse any feeling but wonder and reverence. The place whereon we now stand is holy ground, for, in the creation of every new being, the father and the mother are joining forces with the great Creator Himself.

VII.

DEVELOPMENT.

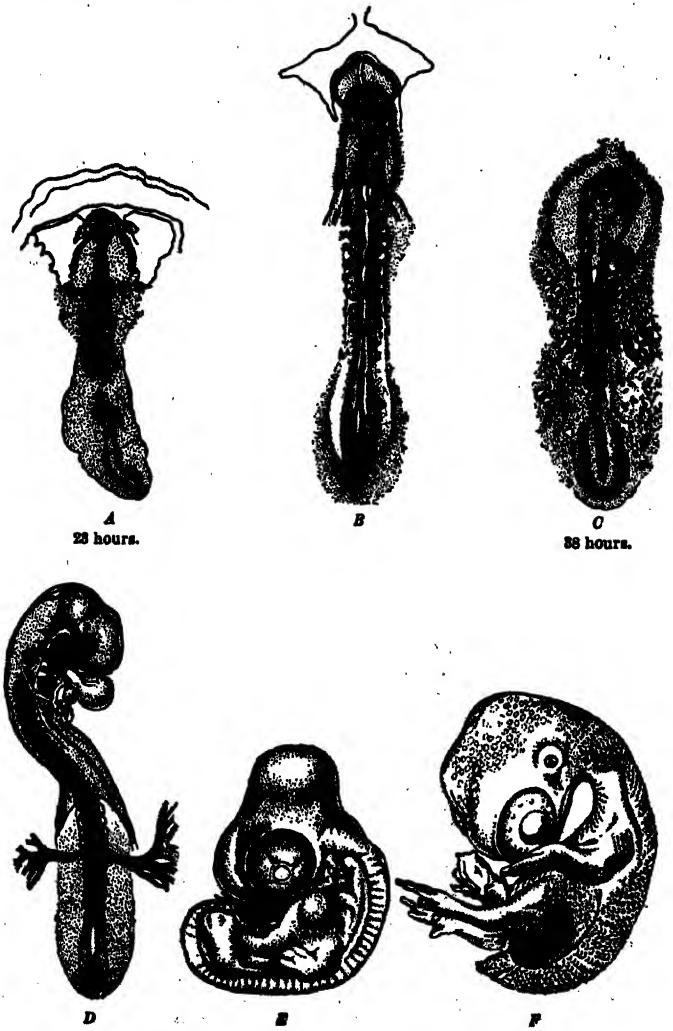
The Chick. If a couple of dozen eggs be placed in an incubator and one of them be removed every day and broken open, the process of development can easily be studied (Fig. 21).

During the first day or two not much change will be noted, but from then onward the formation of the chick will be evident, and gradually the body, head, wings and feet will evolve until about the twenty-first day the perfectly formed little bird will break its shell and emerge into the world able to run about and begin an active existence.

The Ova of Animals. In animals, the egg or ovum is very small and soft, without a shell, and is usually periodically cast out of the body and destroyed, but when touched by a spermatozoon received within the body of the female, remains therein until birth.

In Human Beings. It is important for all to understand the process of development in the human being, and every young person should possess some comprehension of it.

In plants, as has been shown, the ovary which pro-



A
23 hours.

B

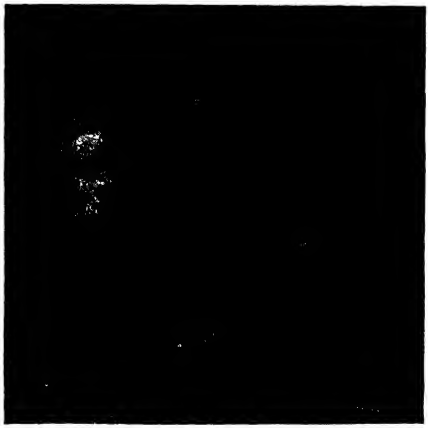
C
38 hours.

D

E

F
10 days.

Fig 21. Development of the chick.
(*After Lillie.*)



THE MARVEL COMPLETE.

duces the seeds, and the room in which the seeds develop are one; but in the animal these organs are separate. In the human female the ovaries, two in number, and about the size of a chestnut, are located low down in the abdomen and are connected by tubes with the room in which the ovum is to develop, and which is called the womb or uterus (Fig. 22).

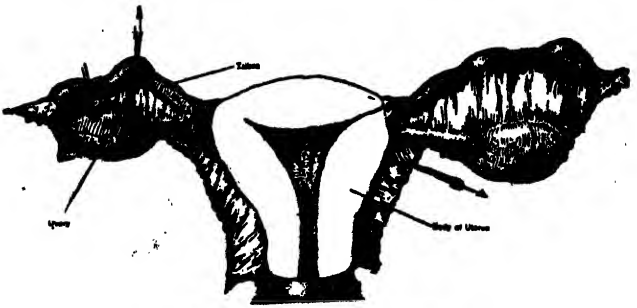


FIG. 22. The uterus, tubes and ovaries.

Ovulation. Once a month an ovum is pushed out from the surface of the ovary, passes into the tube and is carried along to the uterus. Ordinarily the ovum is carried out of the body with the bloody discharge that occurs monthly and known as the menstrual flow.

Fertilization. If, however, somewhere along this tract the male and female elements should meet and join, then the ovum attaches itself to the interior wall of the uterus and membranes are formed around it for its protection.

Development. Later on these become filled with fluid so that the developing infant rests comfortably in a water-bath. Very soon a connection is formed with the blood vessels of the mother's system through a growth which attaches itself to the wall of the uterus, and in which the blood of the infant becomes

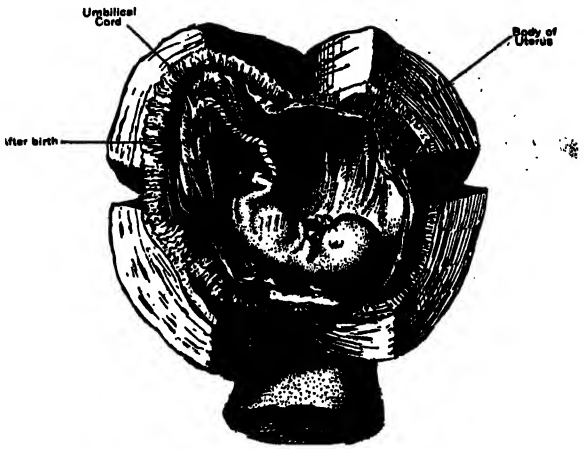


FIG. 23. Human embryo at 3 months. (*After Bonnet*).

purified and receives nourishment by coming into contact with the blood of the mother (Fig. 23). This organ is known as the "after-birth" or placenta. It is connected with the child's body by a cord from ten to eighteen inches long, which enters at the umbilicus, where it becomes detached after birth. The placenta, immediately after the child is born, becomes separated from the wall of the uterus and is expelled.

The developing infant remains in the uterus, under the heart of the mother, during nine months, the uterus increasing in size as more room is needed (Fig. 24). During this period the infant develops from the microscopic ovum until it weighs from six to nine pounds or more. It is most interesting to note that during its intra-uterus life, the embryo repeats, in the course of nine months, the history of the race. At first a simple cell like an amoeba, it comes to resemble a worm, then a fish (with gill openings), then one of the lower animals, and finally assumes the form of an immature human being.

Birth. At the end of this period, through the action of the powerful muscles of the uterus and those of the body, the infant is expelled through the opening between the thighs of the mother, at the cost of great pain, often long-continued, and with danger to life. The uterus then begins at once to lessen in size and in the course of six weeks will have returned to its former state.

Immediately after birth the infant commences to breathe and at once begins its independent existence (Fig. 25).

The Real Birth. The real birth of a human being is not when it appears in the world, but rather the moment when the two germs of life, the spermatozoon and the ovum, touch and unite. From that

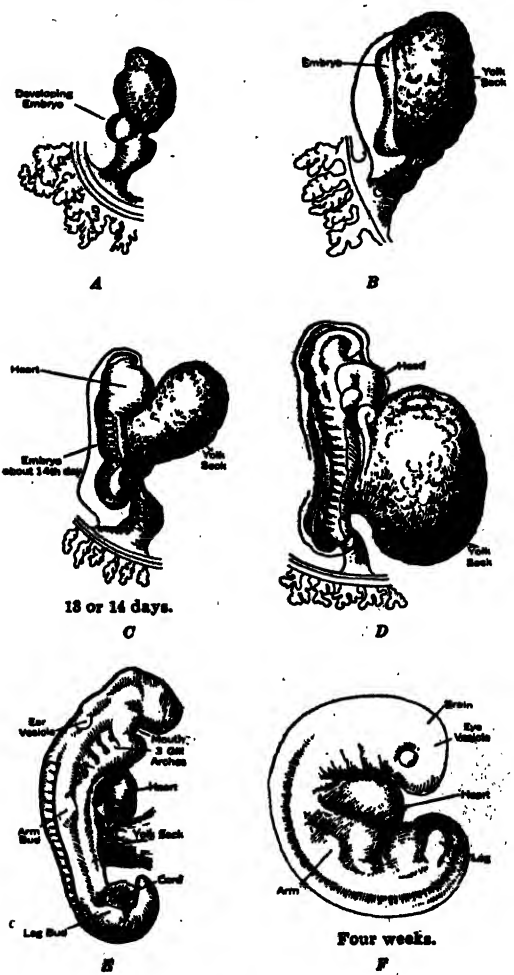


Fig. 24. Development of the human embryo.

(After Kolliker.)

moment the new being should date the beginning of its life, for it then possesses the qualities that come to it through inheritance from its parents, and all that it shall become in life is the development of the qualities there implanted within it. All that growth and education can do is to afford the opportunity for the development of the inherent qualities.

"With the lower animals nature is everything—nurture a minor matter. Inadequate nurture means simply destruction of the individual, and that to the species is a trifling incident. With men and with the plants and animals which man has made to depend on him—and man is himself the most domesticated of all domestic animals—nurture has an ever-growing importance. All our schools, our art, science, religion have their justification as part of our nurture. Still at the end nurture can only develop what was there through nature. Education, training, can make nothing new, and neither can leave any traces we can recognize on the germs of life, which show their development in generations to come.

"When Nature and Nurture work together, we are well on our way to ideal conditions. But Nurture will do nothing unless Nature is first. Nature indicates possibilities. It is for Nurture to make them good." (Jordan.)

In view of all this, any attempt to destroy the life of the unborn, is as immoral as such an attempt would be after birth.

VIII.

FATHERHOOD AND MOTHERHOOD.

Motherhood with Fishes. Motherhood: what does it mean? Very little with most of the fishes, which, after the placing of the eggs in a position in which they may develop into small fry, swim gaily off and seem to think no more about their young or have any concern as to their welfare. However, it is interesting to note that in the case of some fish, of which the salmon is an example, the mother almost or quite loses her life through the act of expelling the eggs, giving an example of the self-sacrifice that is so often seen among mothers.

With Reptiles. Among reptiles motherhood often seems to mean more than with the fish, and in some instances the mother looks after her young with care, as in the case of snakes.

With Insects. More care yet is shown by many varieties of insects. Consider the bee, for example. With these interesting little creatures the greatest care is shown in the preparation of the comb with its curious-shaped cells in which the immature bees grow from eggs carefully placed therein, with plenty of

good food provided for them. One of the most interesting instances is that of the seventeen-year locust, which cuts a trench in the small twig of a tree in such a manner as to make a place for her to pack away her eggs, from which they fall later and enter their long Rip Van Winkle sleep in the earth.

With Birds. But it is among the birds that most remarkable instances are to be seen in which foresight for the coming of the young is shown. And this care is exhibited not only by the mother bird but by the father bird as well. When the mating season has fully come, and the birds have paired off, some varieties being faithful to the same mates year after year, note with what judgment the birds will choose a place for the nest: on the ground, in the swamp, among the reeds or the grasses, in the low bushes or trees; they seem never to make a mistake as to the proper location of the home that is to be.

Nest Building. And then with what care and skill they set about the building of the nest, using the very best material at hand for the purpose (Fig. 26). When all is ready. the eggs are placed in the downy nest, the mother sits on them, while the father feeds her and drives off any enemy that may approach. In some cases he sits on the eggs himself, allow-

ing his mate to have a little freedom, like the gentleman that he is.

The Eggs and Young. And when the eggs are hatched, and there are young birds in the nest, with what tremendous energy do both the parents search for food for them, and watch their growth with the greatest solicitude, teaching them finally to fly and to fend for themselves.

A Mean Bird. There are some exceptions to this good conduct on the part of birds. There is a kind of blackbird called the cowbird, that does not prepare a nest, but mates and then flies gaily off and takes no further concern in the matter; while his mate, careless in her turn, lays her egg in the nest of some other bird, leaving it to the care of the foster-parents.

Motherhood With Animals. Among the higher animals motherhood means much. Although in the case of animals the mother seems to know little about her condition until the birth of the young, she then takes the greatest interest in its welfare and gives it constant care so long as this is needed. Few things in nature are so touching as the mother-love of animals.

The Human Mother. But in the human race the prospective mother knows that a new life is developing within her. During the last part of the time she can feel the motion of the infant in the little room in which it lies, just below her heart, and she makes all the necessary preparation for its coming. During this time all heavy burdens—mental and physical—should be lifted from her, if the best results for both mother and child would be gained. Then, when the full time has arrived, the mother goes down to the very shadow of death, and after a time of the greatest agony, she gives birth to the child. Meanwhile changes have been taking place in the glands that lie in the breasts of the mother, and a few days after birth of the child, milk begins to form in them and is usually abundant enough for the nourishment of the infant.

The Father's Part. Constant care of the prospective mother on the part of the father is necessary for the well-being of both mother and infant, and after the birth of the infant the watchfulness and attention of the father is essential if both are to do well.

A Mean Father. But what shall we say about those unhappy instances where he who should be the husband and caretaker, has, like the selfish cowbird, mated and gone away, indifferent to the condi-

tion left behind him? And what of the thoughts and feelings of the young mother left without love and care to await the arrival of an unacknowledged child? And what shall we say of the man who carries the seed of disease to the wife he has promised to protect from all forms of evil, or to the child of whom he is to be the father? There is no meaner creature on the earth than he who deceives a girl and then leaves her to meet disgrace, suffering and privation alone.

Marriage and its Purpose. It is essential that there shall be preparation for fatherhood and motherhood. Marriage and the integrity of the family are so important to society that every precaution must be taken to preserve them and extend their influence for good. It is to be remembered that whatever other reasons exist for marriage, the primary and natural reason is the bearing and rearing of children, who should be in all respects as perfect as possible. When, therefore, any unnatural steps are taken to prevent the bearing of children, evil follows.

Many of the unhappy marriages that occur have arisen from a disposition on the part of the husband to assert his mastery, forgetting that in the married relation, he who gives most receives most. The man who refuses to acquaint his wife with his business affairs loses not only the interested advice that may be most useful

to him, but destroys that sense of self-respect in the wife that would make her strive without ceasing for their mutual success.

Married life should be conducted upon the principle of partnership, each deferring to the other's judgment and ascertained preferences, the final decision in case of doubt to be by the wife as to household matters, and by the husband in business affairs. There should be no arbitrary ruling by either party, for here are two distinct personalities joining in one common purpose, and yet the disposition and training of each has been different. The true and happy marriage is one in which, as lovers and partners, each respects the right of the other to life, liberty, and the pursuit of happiness and the cultivation of individual gifts.

Necessary Knowledge. The preparation for motherhood should involve such a knowledge of her physical nature on the part of every woman as to make her aware of the meaning of menstruation, ovulation and reproduction. Ignorance on the part of mothers accounts in part for the great number of deaths among infants, one-fourth of whom die before they are a year old. The wife should be taught how to keep her health good and how to prepare for and take care of the coming infant. Domestic science must be her possession, for she is eminently the home-maker.

Preparation for Fatherhood. The preparation for fatherhood involves the building up of the physical strength and health to as near the point of perfection as possible. Hence the value of physical culture, exercise, work, out-of-door games and sports; care of the hearing, sight, teeth and skin; bathing; proper feeding and regularity of the bowels; the insistence upon the observance of all the rules of health, so that when the time of marriage approaches the man shall be physically fit. Herein lies the necessity to conserve the forces of the body in youth so that there shall be no debilitating drain until full manhood.

Both men and women should have sufficient knowledge of anatomy and Nature's laws to possess a clear idea of how reproduction occurs, and the development of the infant, so that all proper preparations for its coming and sustenance may be taken, and the health of the mother conserved.

"His own parents (he that had fathered him and she
that had conceived him in her womb and birth'd him),
They gave this child more of themselves than that,—
They gave afterwards every day, they became part of him."

WALT WHITMAN.

Health. As it is requisite that the father of a family should aim to keep himself at the highest point of mental, moral and physical health, he should avoid all habits that tend otherwise. It is for this reason that he should refrain from the use of tobacco and alcohol.

Courtesy. He should hold towards his wife an attitude of never-failing courtesy and unselfish consideration, always keeping in mind that she is or is to be the mother of their children, and worthy of constant thoughtfulness on his part.

Eugenics. The preparation for fatherhood involves some knowledge of eugenics, the science of improving the race, so that in the selection of a wife there shall be consideration of the qualities that should be possessed by the one who is to be the mother of a family. At least as much care should be taken as the breeder of chickens or horses shows in the selection of the fowls and horses for breeding purposes. The human race will improve only as wise motherhood is sustained by thoughtful, virtuous and healthy fatherhood.*

Divine Assistance. Both parents should possess a deep religious sense that will lead them to look to the Inner Guide so that they may be enabled to perform aright their difficult task, in the spirit of reverence for the Creator, who has given to them their reproductive power.

* See "Parenthood and Race Culture," by C. W. Saleeby.

IX.

PATHOLOGY.

A Weight Lifted. You have no doubt been struck by certain terms that are seen, especially in medical advertisements, that have aroused curiosity and, possibly, alarm. One of these terms is spermatorrhea, which is described as a loss of virility, due to emissions of semen.

Now it happens that once in a while, during the night, there will be such a loss, especially during the teens, but it seldom does any harm unless such experiences be encouraged by had habits. If not encouraged, the condition improves, and no permanent loss of strength will follow. Many a quack doctor grows rich by preying on the fears of boys as to this condition. All handling of the sexual organs, except for purposes of cleanliness, should be avoided. So far as these organs are concerned, the less they are thought about, the better.

Social Diseases. There are some disorders, however, that must be spoken of because of their prevalence, and because so many boys and young men fall victims to them. They are sure to be brought to your attention, sooner or later, through the conversation

of other men, or in some other way; and it is necessary that you shall have correct information in regard to them, not only because you will need the knowledge for your own protection, but also for the information that you may be thus enabled to pass on to others.

Continence. These disorders arise through immorality. It was intended that a man should live a continent life, free from the use of the reproductive organs, until his marriage, and then that he be true to his wife; but some men are not willing to be moral, and have unlawful relations with immoral women, who are almost certain to have one or another form of contagious diseases with which they infect the men who have improper relations with them.*

Gonorrhea. You will hear of one of these disorders called gonorrhea. It is an inflammation affecting the passage-way to the bladder and is accompanied by a thick discharge which is very infectious. The inflammation may extend to the nearby parts, including the reproductive glands, and so injure them as to prevent them from producing spermatozoa, and in this way put a stop to the possibility of offspring. A man thus often becomes sterile.

*See "Social Diseases and Marriage," by Dr. Prince A. Morrow.

The disease is difficult to cure and sometimes lasts for long periods of time, and is liable to recur. Men who may think they are cured, or may not think so, very often infect the women they marry, and produce in them serious inflammations that often require the surgical removal of the reproductive organs. The possibility of offspring is then lost. The health of a large number of wives is ruined by this disease thus contracted. It is the cause of many miscarriages. Death sometimes follows. A large proportion of the blind are so afflicted from this cause. Children often become infected by sleeping in bed with a parent who has the disease. This disorder is very serious, and is a source of much unhappiness in married life.

FIG. 27. Inflammation of the eyes, due to gonorrhea, with blindness the probable result.

Syphilis. Another of this class of diseases, contracted in the same way, is the terrible affection known as syphilis. It is not so prevalent as the one described above, but is more persistent, requiring several years of the most skillful treatment for a cure. When the poison has once penetrated the system it may affect every part of the body, causing ulcerations, paralysis, decay of some

of the tissues, long continued debility, and sometimes sudden death. This disease also may be given to wives and children, and is one of the few diseases that may be transmitted to the next generation, causing the death of many infants before birth, and producing such weakness in many others that they die soon after birth, or else are mentally or physically defective. It is the cause of much of the feeblemindedness, insanity and criminality that so abounds.

Fearful as are the ravages of these diseases they would entirely disappear if men would live moral lives, avoiding the company of the immoral.

Houses of Vice a Cause. In almost every community there exist houses given up to social vice, and hotels and lodging houses where vice is allowed.

These places are a constant source of temptation to all classes. They are allowed to exist contrary to law, under an erroneous plea of necessity. There should be persistent effort on the part of all good citizens to close these places, nor allow any others to open, and to employ every proper means to reduce all forms of social vice to the vanishing point.

X.

SPECIAL HYGIENE.

Indulgence not a Necessity. Some of the best physicians in this country have signed a statement to the effect that a "pure, continent life is consonant with the highest degree of mental and physical health"; and thus vanishes any supposed necessity for sexual indulgence. There are a great number of instances of men who have lived free from sexual experiences from childhood to old age, and have shown the utmost vigor. Their vitality has been made useful in other directions. The sperm is absorbed into the system and supplies daily strength for daily needs.

Keep Sane. In the endeavor to live a clean life, the most important thing, perhaps, is to get into a sane frame of mind towards this whole question. Do not let the thoughts dwell upon it unduly, and when this occurs seek at once some diversion, such as hard work, or active play or exercise, or reading, or conversation. Go to bed tired.

A Single Standard. This sanity of mind is helped by the upholding of the same standard of morals for men as has been held for women; holding each equally guilty for the same sin. The fact that men are

virile by nature is made the excuse for their immorality. But this very strength should lead men to protect the weaker sex—not to victimize women. No progress can be made in the reduction of social vice or the diseases that result therefrom, so long as sexual sin in men is considered less censurable than in the case of women.

High Ideals. The ideals of youth should be high, and there should be a determination to maintain purity and integrity at all costs; to have no shameful experiences and secrets in one's life that will make cowards of us and destroy our self-respect. We insist that the woman that is to be a wife shall be pure; let us see to it that we shall be as pure and as free from any kind of taint as we demand she should be. Otherwise we are most unfair.

Athletics. Make it a point to enter into athletics of some sort. It is most important to have some good way to work off the surplus energy, and there is nothing better than gymnastics or field sports to effect this object. There are besides many other advantages that will result from a hearty entrance into athletic competition with one's fellows.

The boy who wins prizes on the field is not apt to fall into immoral ways.

Drink. Many a young man has been led away from the path of virtue while under the influence of liquor. It is one of the most facile instruments of sin; avoid it as you would the plague. There are also serious objections to the use of tobacco.

Companions and Early Marriage. Select your boy friends and girl friends with the greatest care, for not only will you be judged by them, but such companionship is most powerful for either good or evil. It is very important in fixing the attitude of the mind. Everything points towards the rule that a young man should refrain from all sexual experiences until he is twenty-five years of age, and then marry and be faithful to his wife. The man about to marry should exercise much care in the selection of the woman who is to be the mother of his children; he should have the Coming Race in view.

Be a Protector. The attitude of men towards those of the opposite sex should be one of protection. They are the stronger, and should make it their aim not only not to do them injury, but to protect them from wrong and degradation from any source. Maintain dignified and respectful conduct towards all girls and women.

Avoid familiarities. Be fair to girl friends. They are cautioned against allowing any familiarities, and yet

they want to be liked and not seem prudish. Therefore observe this rule: *Keep your hands off.* The observance of this rule will also make it easier to resist temptations on your part.

Reading. Exercise care as to reading. Books that excite the passions should be avoided. Those that give accurate information as to reproduction and social hygiene, when tactfully written, may be read, but little time should be spent upon these. A carefully selected list of the best and most recent books on this subject may be had on request of the American Social Hygiene Association, 105 West 40th Street, New York City. Also The American Bureau of Moral Education, 332 South Michigan Avenue, Chicago. Avoid immoral or suggestive stage plays and players.

Oppose Social Vice. Stand in determined opposition to all forms of social vice in the community, and resist the tendency towards toleration of this form of evil, knowing its far-reaching harmful influence. Good citizenship demands good morals and obedience to the laws.

Need for Chivalry. Remember that the times call, far more than in the days of old, for that chivalrous devotion to women that was manifested in the career of Sir Galahad, whose "Strength was as the strength of ten because his heart was pure."

Be not one who would trample fallen womanhood still deeper into the mire, still less be one who would lead any astray. Stand ready at all times to prevent wrong and degradation to womanhood. Thus and thus only is it possible to reduce social vice, prevent social disease and improve the race. In this way only is it possible to preserve our nation from the fate that befell Assyria, Greece and Rome, and make our country what it should be—an example to the whole world in progressive righteousness.

Trust in God. Last of all, never lose sight of the fact that in the midst of an ever-present temptation, there is no safety except in the strength that comes from a reliance upon God.